

Section 2-2: Logic

By the end of this lesson, you should be able to answer:

- How do you determine truth values of negatives, conjunctions, disjunctions and represent them using Venn diagrams?

Define the following:

1. Statement
2. Truth Value
3. Negation
4. Compound Statement
5. Conjunction
6. Disjunction
7. Truth Table

Example 1: Use the following statements to write a compound statement for each conjunction. Then find its truth value. Explain your reasoning.

p : One meter is 100 mm

q : November has 30 days

r : A line is defined by two points

a. p and q

b. $\sim p \wedge r$

Example 2: Use the following statements to write a compound statement for each disjunction. Then find its truth value. Explain your reasoning.

p : \overrightarrow{AB} is proper notation for “ray AB ”

q : Kilometers are metric units

r : 15 is a prime number

a. p or q

b. $q \vee r$

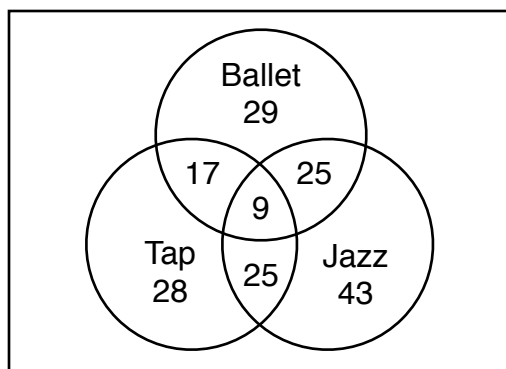
c. $\sim p \vee r$

Example 3: Construct a truth table for the following.

a. $p \wedge q$

b. $\sim p \wedge (\sim p \vee q)$

Example 4: The Venn diagram shows the number of students enrolled in Maggie Brann's Dance School for tap, jazz, and ballet classes.



a. How many students are enrolled in all three classes?

b. How many students are enrolled in tap or ballet?

c. How many students are enrolled in jazz and ballet, but not tap?

Problem Set:

"Lack of money is no obstacle. Lack of an idea is an obstacle." - Ken Hakuta